CHAPTER 2

DESCRIPTION OF THE TENNESSEE WESTERN VALLEY (BEECH RIVER) WATERSHED

2.1. BACKGROUND. Kentucky Lake was created when TVA completed Kentucky Dam in 1944. The dam, located 22 miles upstream of the confluence of the Tennessee and Ohio Rivers, is 206 feet high and 8,422 feet long; it's the longest in the TVA system. The Western edge of the watershed defines the Tennessee Western Valley (to the west is the Mississippi River Valley). The watershed has been split into the upstream (Beech River) and downstream drainage areas (KY Lake).

This Chapter describes the location and characteristics of the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The Tennessee Western Valley (Beech River) Watershed is located in Tennessee and Mississippi. The Tennessee portion of the watershed (97.8% of the watershed) includes parts of Benton, Carroll, Chester, Decatur Hardin, Henderson, Humphreys, McNairy, Perry, and Wayne Counties.

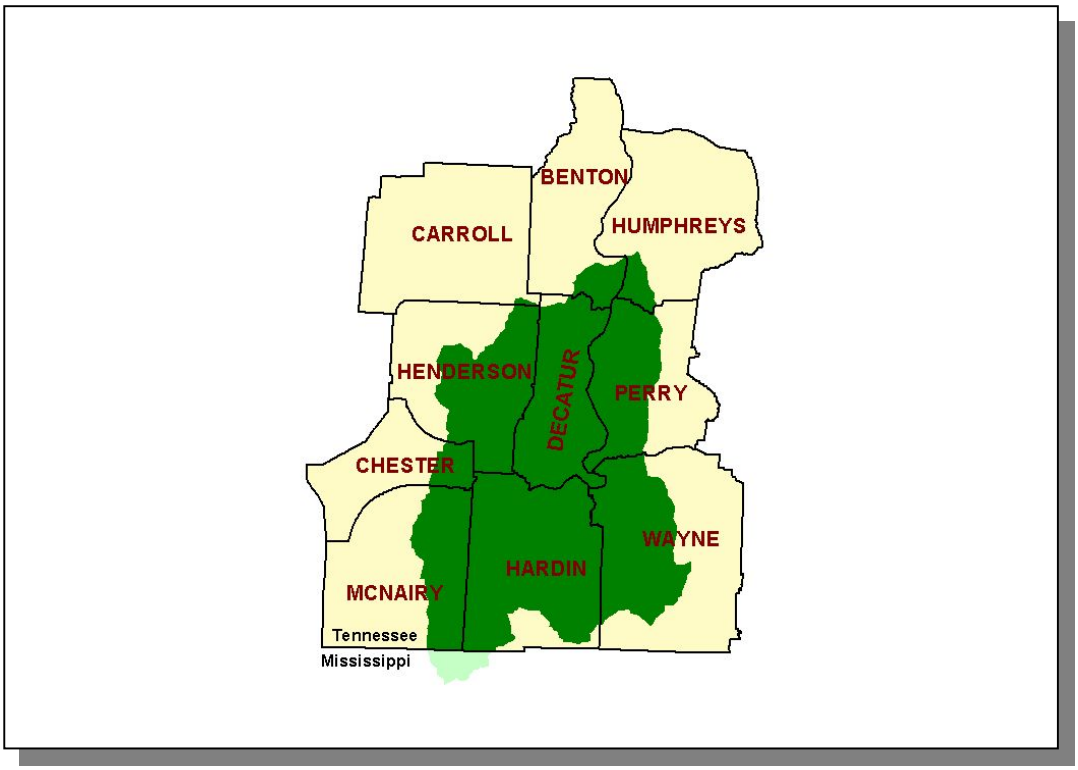

Figure 2-1. General Location of the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Dark green, Tennessee portion; light green, Mississippi portion.*

COUNTY	% OF WATERSHED IN EACH COUNTY
Hardin	26.6
Decatur	16.9
Wayne	15.6
Henderson	14.5
Perry	10.6
McNairy	9.6
Benton	2.2
Chester	2.2
Humphreys	1.6
Carroll	0.2

Table 2-1. The Tennessee Western Valley (Beech River) Watershed Includes Parts of Ten West Tennessee Counties. *Percentages are calculated for Tennessee portion of watershed.*

2.2.B. Population Density Centers. Six state highways and one interstate serve the major communities in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed.

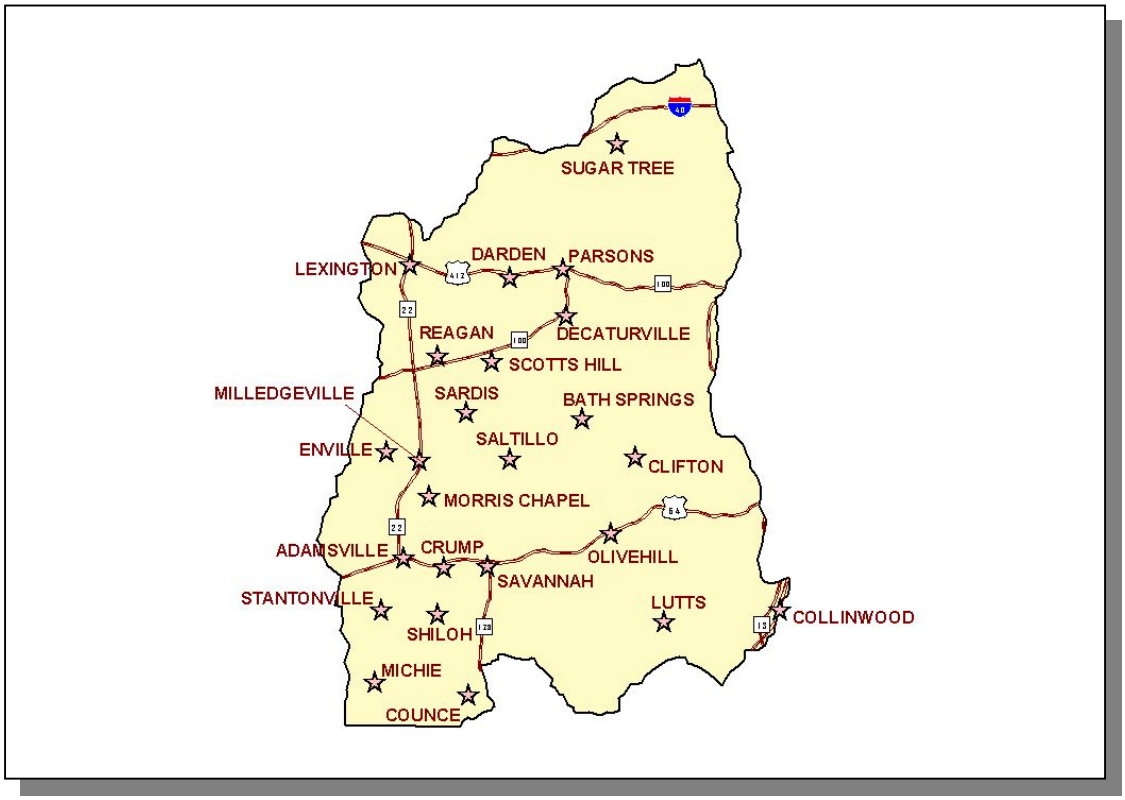

Figure 2-2. Municipalities and Roads in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

MUNICIPALITY	POPULATION	COUNTY
Lexington*	8,353	Henderson
Savannah*	6,588	Hardin
Parsons	2,430	Decatur
Adamsville	1,824	McNairy
Crump	1,672	Hardin
Collinwood	1,036	Wayne
Michie	890	McNairy
Decaturville*	874	Decatur
Scotts Hill	859	Henderson/Decatur
Clifton	805	Wayne
Saltillo	449	Hardin
Sardis	427	Henderson
Milledgeville	424	Chester/Hardin/McNairy
Stantonville	304	McNairy
Enville	200	Chetsr/McNairy

Table 2-2. Communities and Populations in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Population based on 1999 census (Tennessee 2001/2002 Blue Book). Asterisk (*) indicates county seat.*

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The Tennessee Western Valley (Beech River) Watershed, designated 06040001 by the USGS, drains approximately 2,097 square miles, 2,041 square miles of which are in Tennessee, and empties to the Tennessee Western Valley (KY Lake) Watershed.

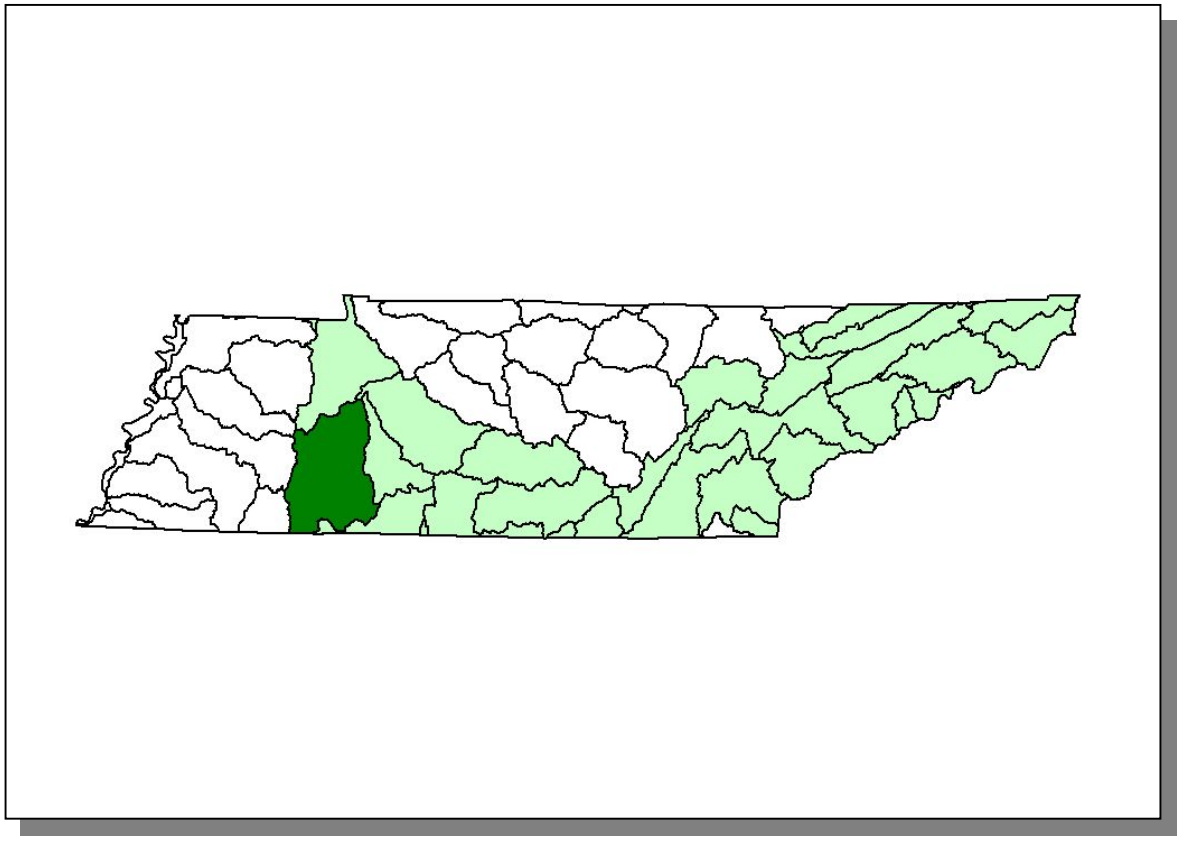

Figure 2-3. The Tennessee Western Valley (Beech River) Watershed is Part of the Tennessee River Basin.

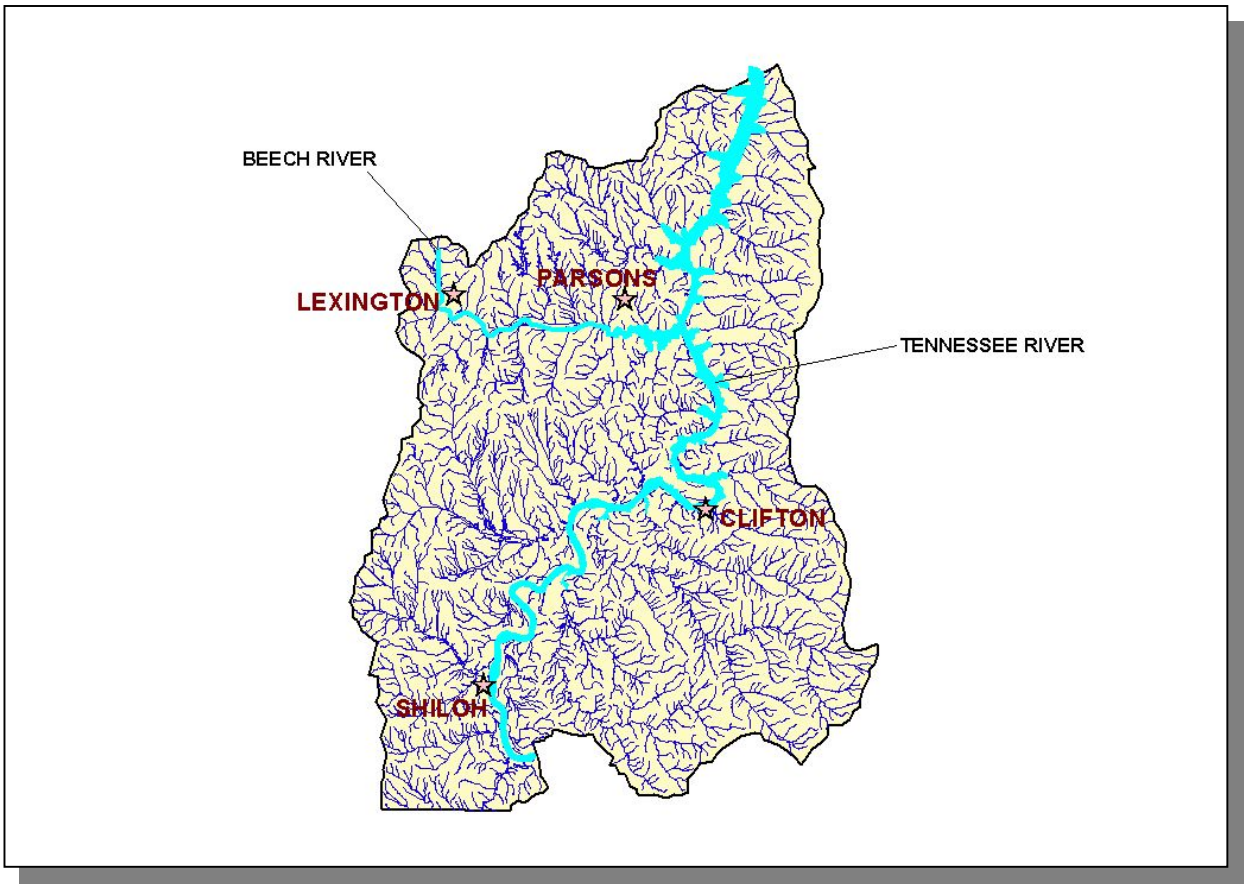

Figure 2-4. Hydrology in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *There are 3,435 stream miles and 20,763 lake acres in the Tennessee portion of the Tennessee Western Valley (Beech River) Watershed as catalogued in the assessment database. An additional 88 stream miles are located in the Mississippi portion of the watershed as catalogued in the River Reach File 3 database. The Tennessee River and Beech River, and the cities of Clifton, Lexington, Parsons, and Shiloh are shown for reference.*

2.3.B. Dams. There are 23 dams inventoried by TDEC Division of Water Supply in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

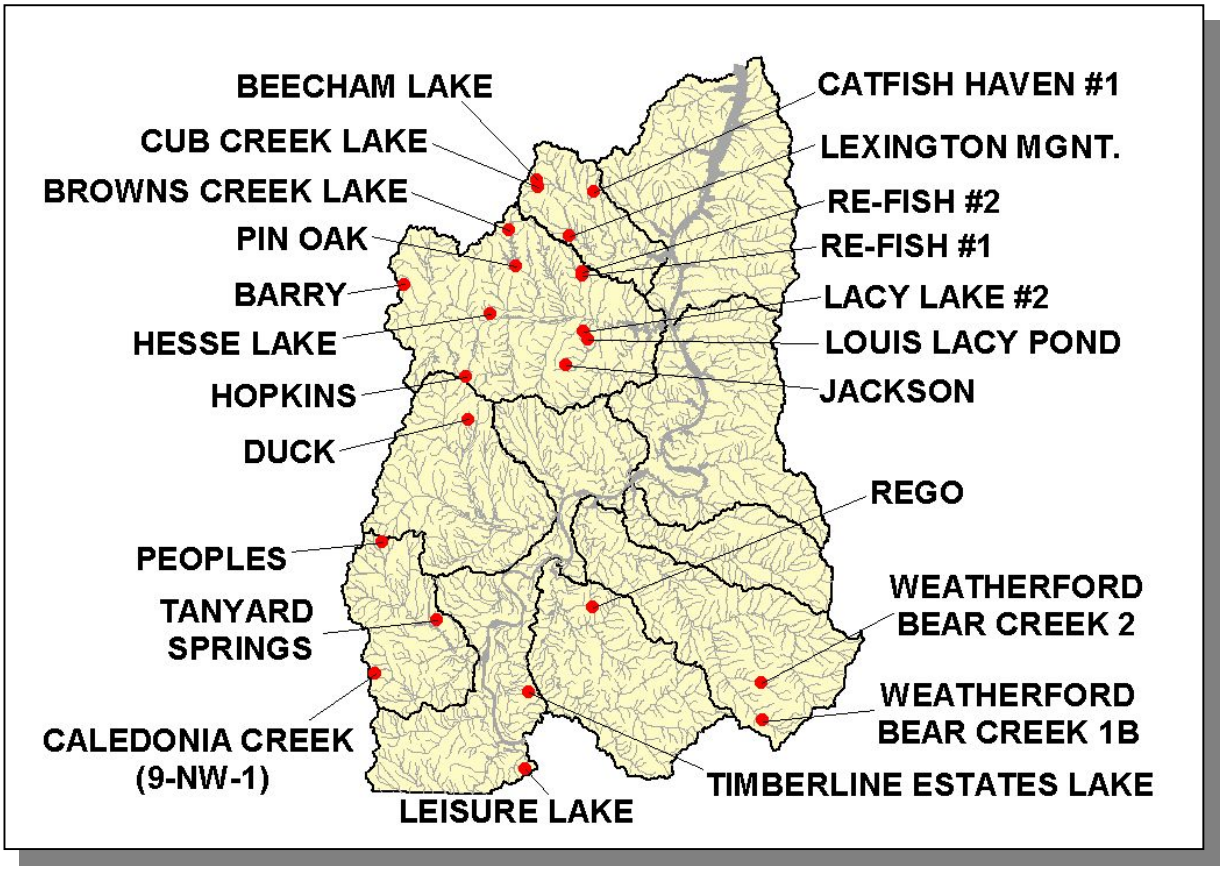

Figure 2-5. Location of Inventoried Dams in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *More information is provided in Appendix II and on the TDEC homepage at http://gwidc.memphis.edu/website/dws/.*

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

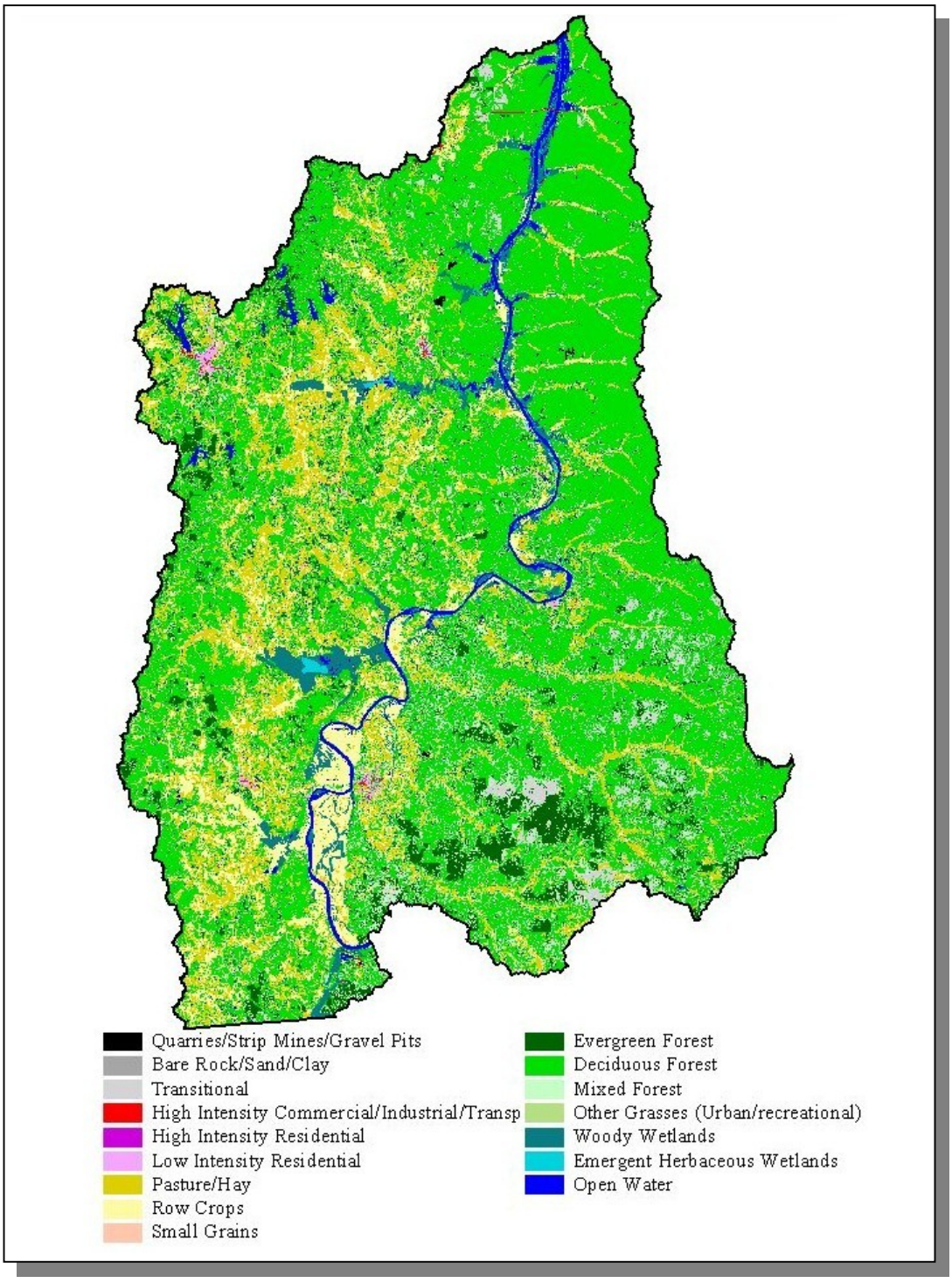

Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery in the Group 3 Portion of the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

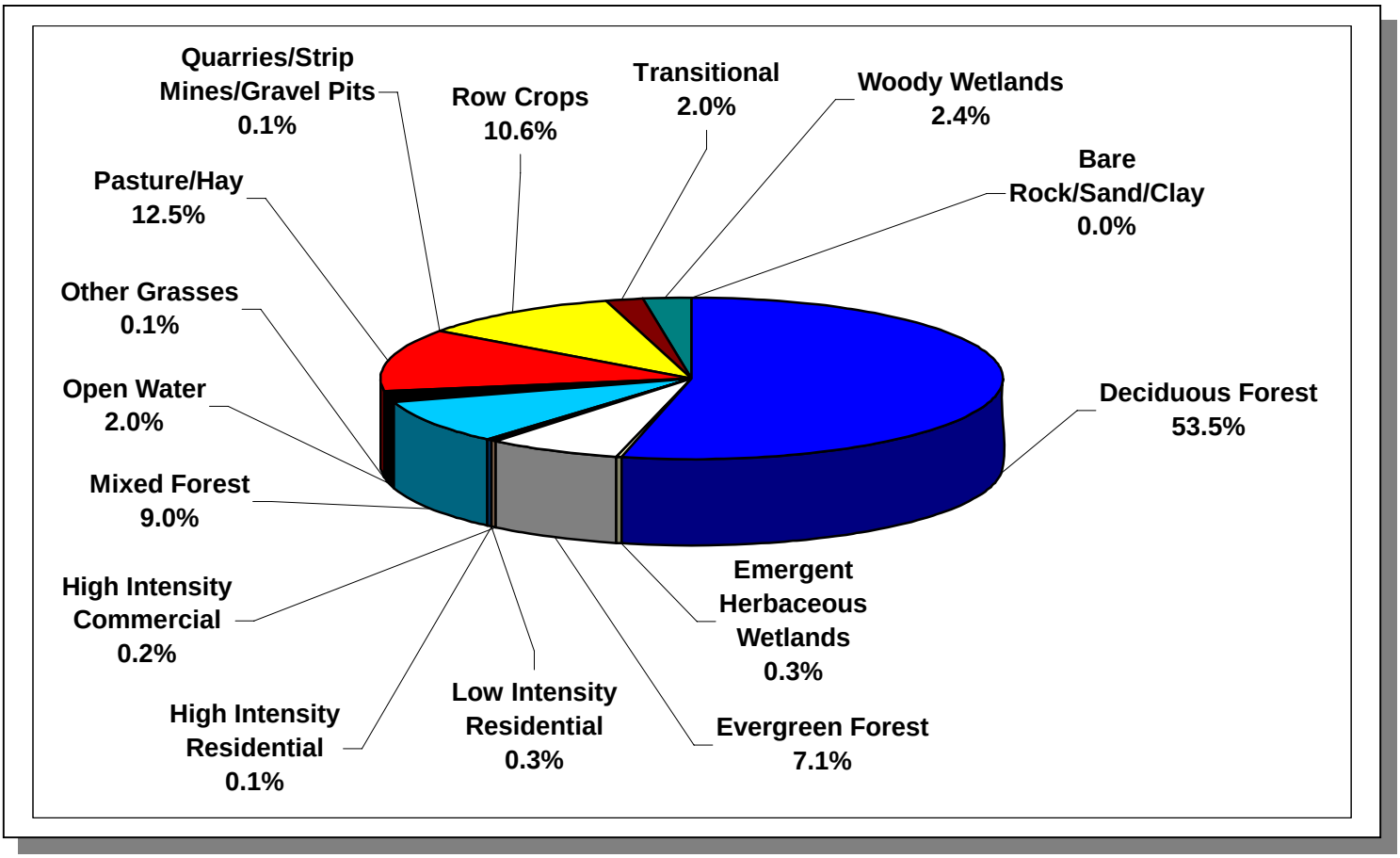

Figure 2-7. Land Use Distribution in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *More information is provided in Appendix II.*

Sinkholes, springs, disappearing streams and caves characterize karst topography. The term "karst" describes a distinctive landform that indicates dissolution of underlying soluble rocks by surface water or ground water. Although commonly associated with limestone and dolomite (carbonate rocks), other highly soluble rocks such as gypsum and rock salt can be sculpted into karst terrain. In karst areas, the ground water flows through solution-enlarged channels, bedding planes and microfractures within the rock. The characteristic landforms of karst regions are: closed depressions of various size and arrangement; disrupted surface drainage; and caves and underground drainage systems. The term "karst" is named after a famous region in the former country of Yugoslavia.

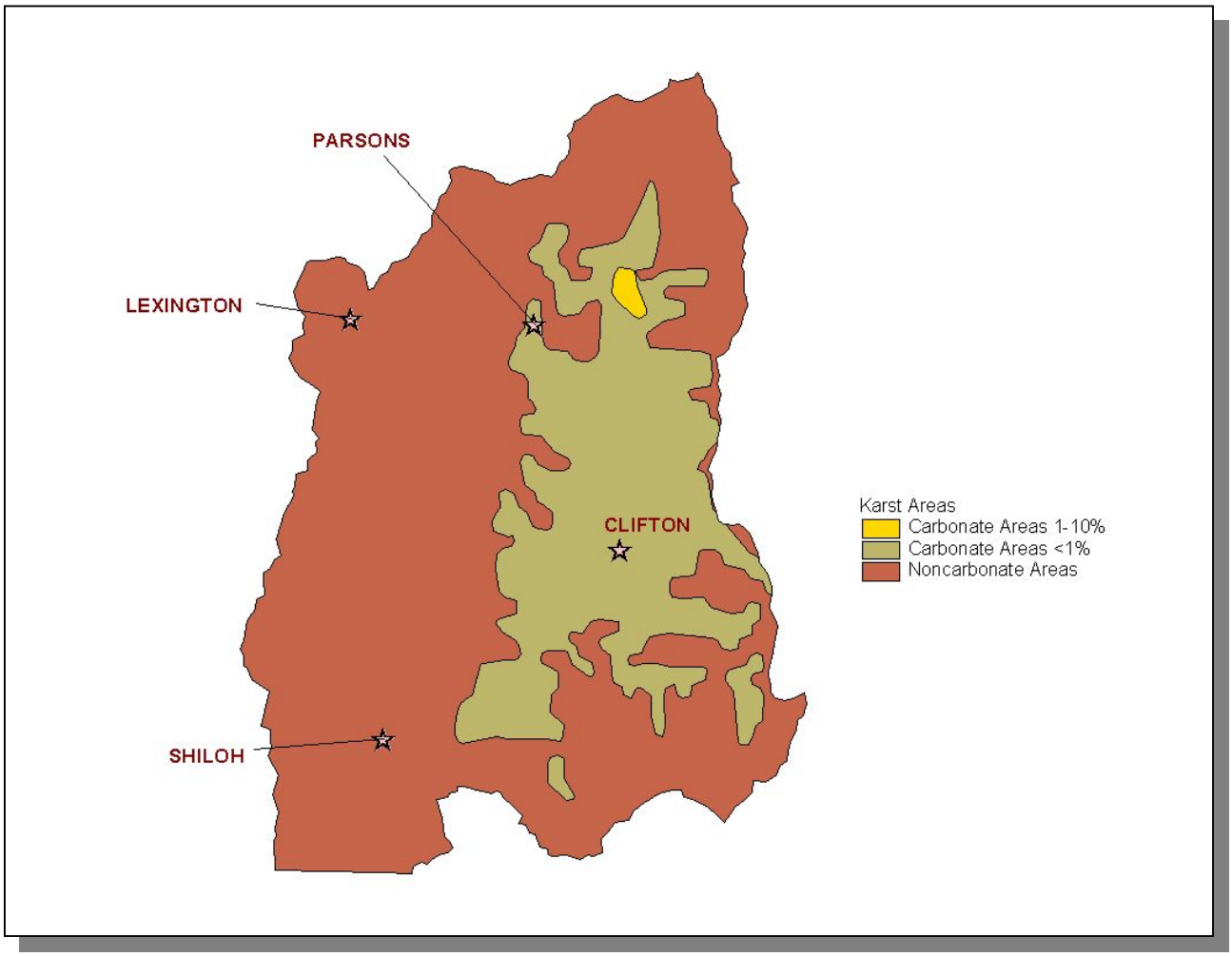

Figure 2-8. Illustration of Karst Areas in Tennessee Portion of Tennessee Western Valley (Beech River) Watershed. *Locations of Clifton, Lexington, Parsons, and Shiloh are shown for reference.*

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies can aid the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Tennessee portion of the Tennessee Western Valley (Beech River) Watershed lies within 2 Level III ecoregions (Southeastern Plains and Interior Plateau) and contains 5 Level IV subecoregions:

- **Blackland Prairie (65a),** extending north from Mississippi, is a flat to undulating lowland region covering only a small portion of McNairy County, Tennessee. Although there is some of the Cretaceous-age chalk, marl, and calcareous clay that characterizes the region in Mississippi and Alabama, the northern extent of the Blackland Prairie in Tennessee is not distinct. To the south, the natural vegetation had dominant trees of sweetgum, post oak, and red cedar, along with patches of bluestem prairie. Today, the area is mostly in cropland and pasture, with small patches of mixed hardwoods.

- **Southeastern Plains and Hills (65e)** contain north-south trending bands of sand and clay formations. Tertiary-age sand, clay, and lignite are to the west, with Cretaceous fine sand, fossiliferous micaceous sand, and silty clays to the east. Elevations reach over 650 feet with more rolling topography and relief than the Loess Plains (74b) to the west. Streams have increased gradient, sandy substrates, and distinct faunal characteristics. Natural vegetation is oak-hickory forest, grading into oak-hickory-pine to the south.

- **Fall Line Hills (65i)** ecoregion, comprising the Tennessee or Tombigbee Hills in Mississippi and the Fall Line Hills in Alabama, is composed primarily of Cretaceous-age coastal plain sandy sediments. The sand and chert gravel surficial materials are covered by sandy loam topsoils. Terrain is mostly oak-hickory-pine forest on open hills with 100-200 feet of relief. Elevations in the small Tennessee portion, roughly between Chambers Creek and Pickwick Lake in Hardin County, are 450-685 feet.

- **The Transition Hills (65j)** have the highest elevations in Ecoregion 65, and contain characteristics of both the Southeastern Plains (65e) and the Interior Plateau (71). Many streams of this transition area have cut down into the Mississippian, Devonian, and Silurian-age rocks and may appear similar to those of the Interior Plateau (71). Cretaceous-age coastal plain deposits of silt, sand, clay, and gravel overlie the older limestone, shale, and chert. It is a mostly forested region of oak-hickory-pine, and has pine plantation activities associated with pulp and paper operations.

- **Western Highland Rim (71f)** is characterized by dissected, rolling terrain of open hills, with elevations of 400-1000 feet. The geologic base of Mississippian-age limestone, chert, and shale is covered by soils that tend to be cherty and acidic with low to moderate fertility. Streams are relatively clear with a moderate gradient. Substrates are coarse chert, gravel and sand with areas of bedrock. The native oak-hickory forests were removed over broad areas in the mid-to late 1800's in conjunction with the iron-ore related mining and smelting of the mineral limonite, however today the region is again heavily forested. Some agriculture occurs on the flatter interfluves and in the stream and river valleys. The predominant land uses are hay, pasture, and cattle with some cultivation of corn and tobacco.

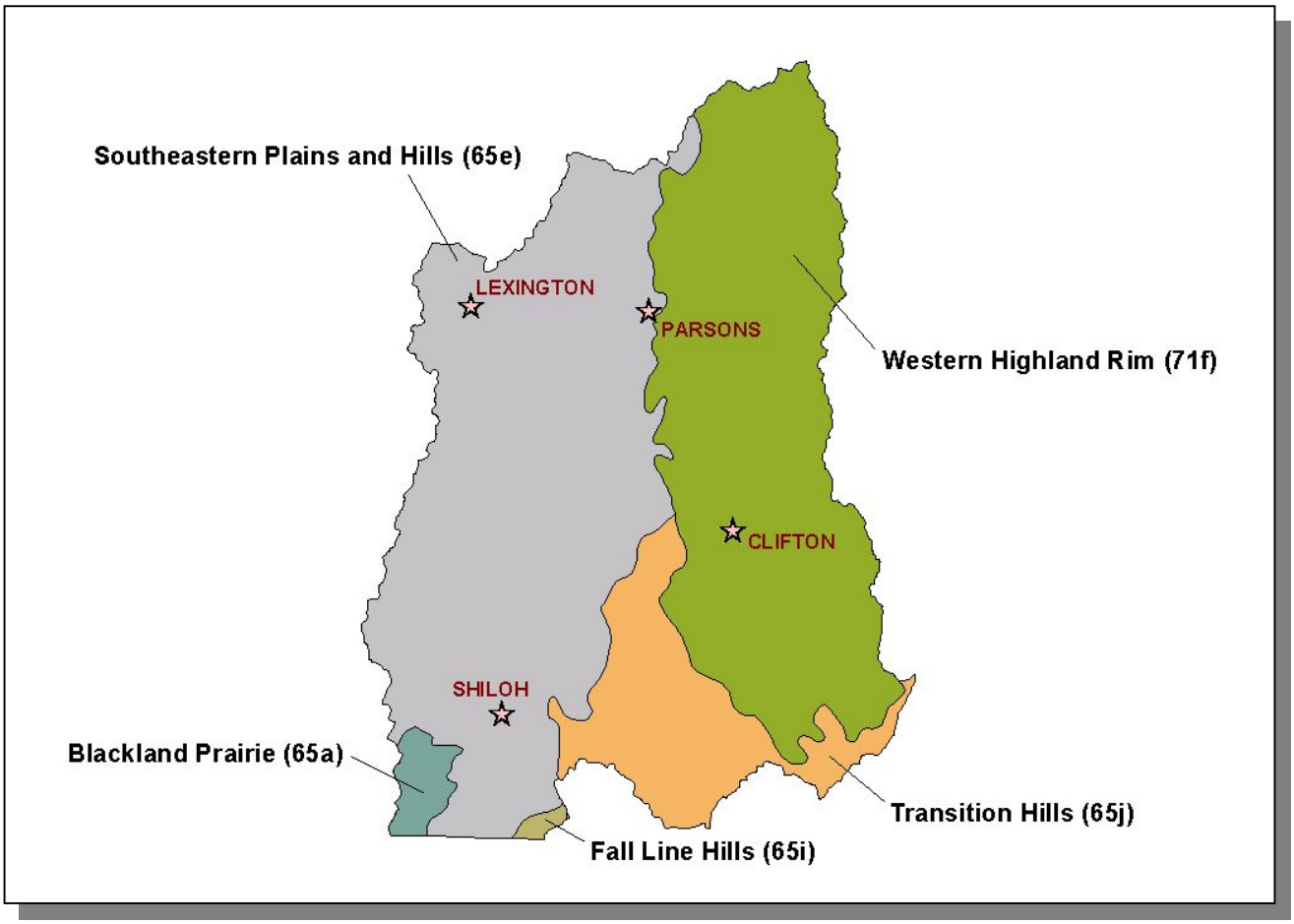

Figure 2-9. Level IV Ecoregions in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Locations of Clifton, Lexington, Parsons, and Shiloh are shown for reference.*

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

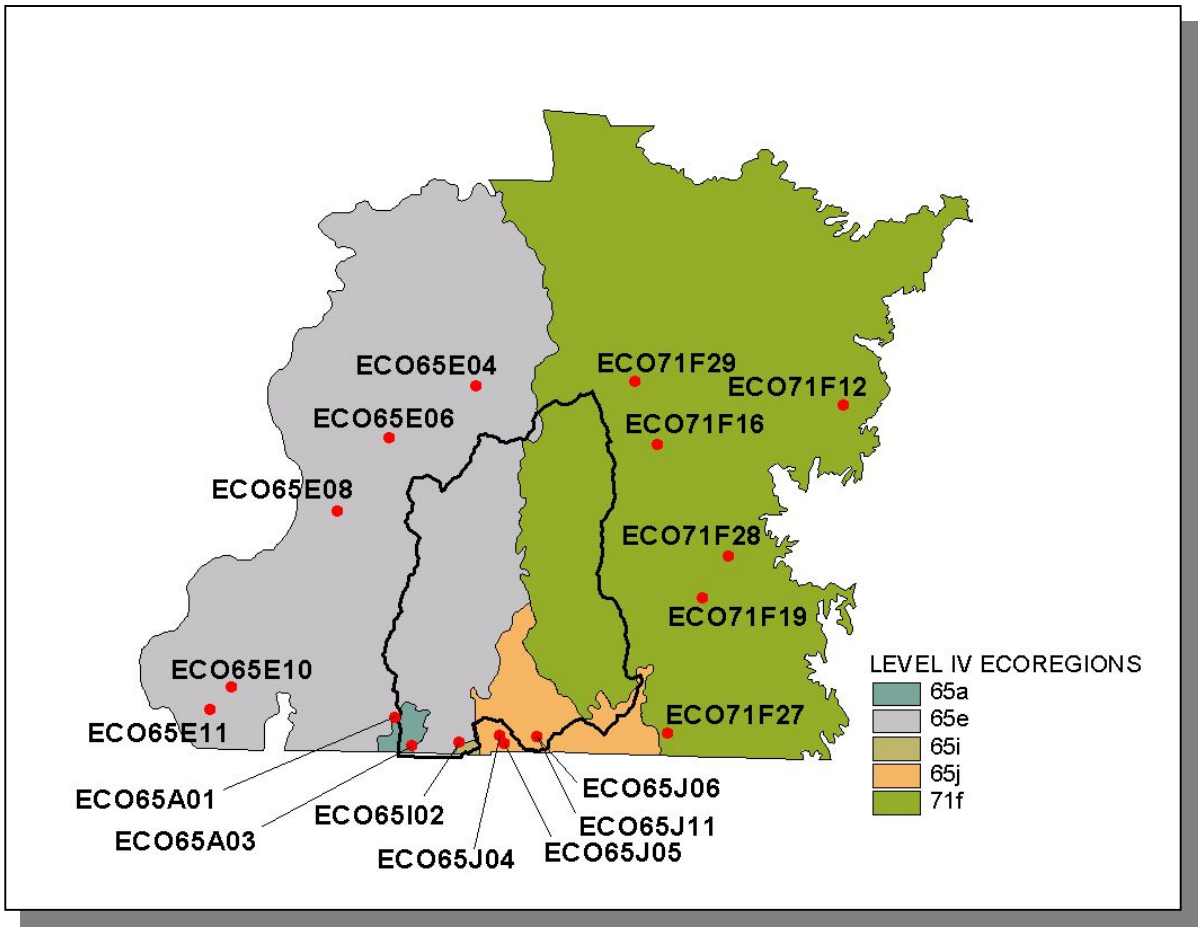

Figure 2-10. Ecoregion Monitoring Sites in Level IV Ecoregions 65a, 65e, 65i, 65j, and 71f in Tennessee. *The Tennessee portion of the Tennessee Western Valley (Beech River) Watershed boundary is shown for reference. More information is provided in Appendix II.*

2.6. NATURAL RESOURCES.

2.6.A. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Crustaceans	1
Insects and Spiders	1
Mussels	10
Snails	2
Amphibians	1
Birds	8
Fish	8
Mammals	4
Reptiles	4
Plants	36
Total	**75**

Table 2-3. There are 75 Known Rare Plant and Animal Species in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

In the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed, there are 8 rare fish species, 1 rare crustacean species, 9 rare mussel species, and 5 rare snail species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Carpiodes velifer	Highfin Carpsucker		D
Cycleptus elongatus	Blue Sucker	MC	T
Etheostoma corona	Crown Darter	MC	E
Hemitremia flammea	Flame Chub	MC	D
Ichthyomyzon gagei	Southern Brook Lamprey		D
Ichthyomyzon unicuspis	Silver Lamprey		D
Noturus sp 3	Saddled Madtom		T
Typhlichthys subterraneus	Southern Cavefish	MC	D
Orconectes wrighti	A Crayfish	MC	E
Cumberlandia monodonta	Spectaclecase		
Cyprogenia irrorata	Eastern Fanshell Pearly Mussel	LE	E
Hemistena lata	Cracking Pearly Mussel	LE	E
Lampsilis abrupta	Pink Mucket	LE	E
Obovaria retusa	Ring Pink	LE	E
Plethobasus cicatricosus	White Wartyback	LE	E
Plethobasus cooperianus	Orange-Foot Pimpleback	LE	E
Pleuronema clava	Clubshell	LE	E
Pleurobema plenum	Rough Pigtoe	LE	E
Quadrula cylindrica cylindrica	Rabbitsfoot		
Lithasia salebrosa	Rustic Rocksnail		
Vertigo teskeyae	Swamp vertigo		

Table 2-4. Rare Aquatic Species in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. *Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service, MC, Management Concern for U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; T, Listed Threatened by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency. More information may be found at http://www.state.tn.us/environment/nh/data.php.*

2.6.B. Wetlands. The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at:

http://www.state.tn.us/environment/nh/wetlands/

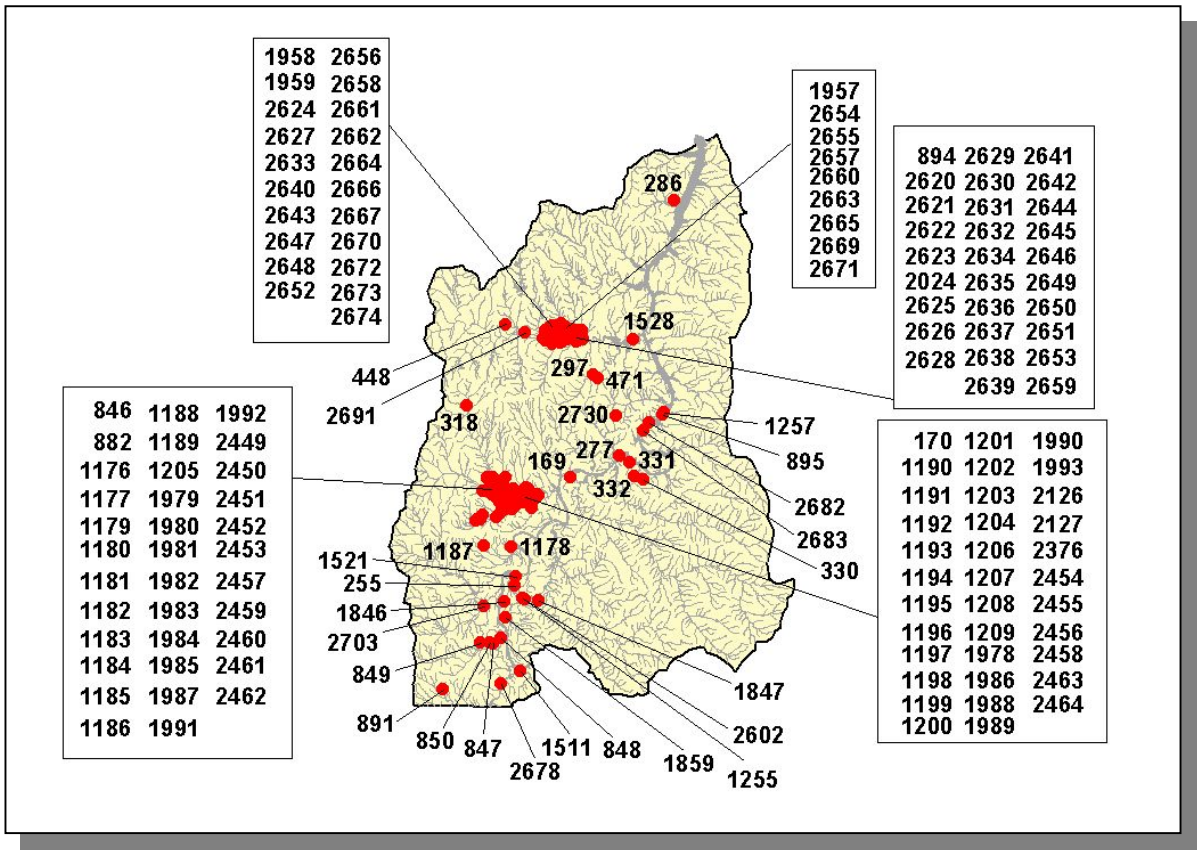

Figure 2-11. Location of Wetland Sites in TDEC Division of Natural Heritage Database in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands*. More information is provided in Appendix II.*

2.7. CULTURAL RESOURCES.

2.7.A. Greenways. The Tennessee Western Valley (Beech River) Watershed has at least nine greenways/trails:

- Beech Bend Bicycle Train in Decaturville
- Crump Bicycle Trail
- Crump walking Trail
- Decatur County Hiking Trail
- Decatur County Nature Trail
- Savannah Nature Center
- Savannah Trail of Tears
- Scotts Hill Trail
- Tennessee River Trail in Perry County

More information about greenways and trails in the watershed may be found at:

http://www2.state.tn.us/tdec/GREENWAYS/tnmap.htm

2.7.B. Interpretive Areas. Some sites representative of the natural or cultural heritage are under state or federal protection:

- Mousetail Landing State Park is a 1,247-acre area located on the east banks of the Tennessee River. The site is managed by the state of Tennessee.
- Natchez Trace State Park and Forest was named for the famous Nashville to Natchez Highway, an important wilderness road of the late 18th and early 19th centuries. The site is managed by the sitate of Tennessee.
- Pickwick Dam Reservation is located South of Savannah and north of the Mississippi state line. It has a campground with water and electric hookups, and boat launch ramps. The site is managed by TVA.
- Pickwick Landing State Park is located at a site that was a riverboat stop in the 1840's. The park area was once provided housing for the TVA construction crews and their families. The property was transferred from TVA to the state of Tennessee in the early 1970's. The site is managed by the state of Tennessee.
- Shiloh National Military Park was established in 1894 to preserve the scene of the 1862 Civil War battle. The 4,000-acre battlefield is located on the west bank of the Tennessee River. The site is managed by the National Park Service.

- Tennessee NWR-Busseltown and Duck River Units, established in 1945, is managed by the U.S. Fish and Wildlife Service as an important resting and feeding area for wintering waterfowl as well as migratory birds and resident wildlife. The sites are managed by the U.S. Fish and Wildlife Service.

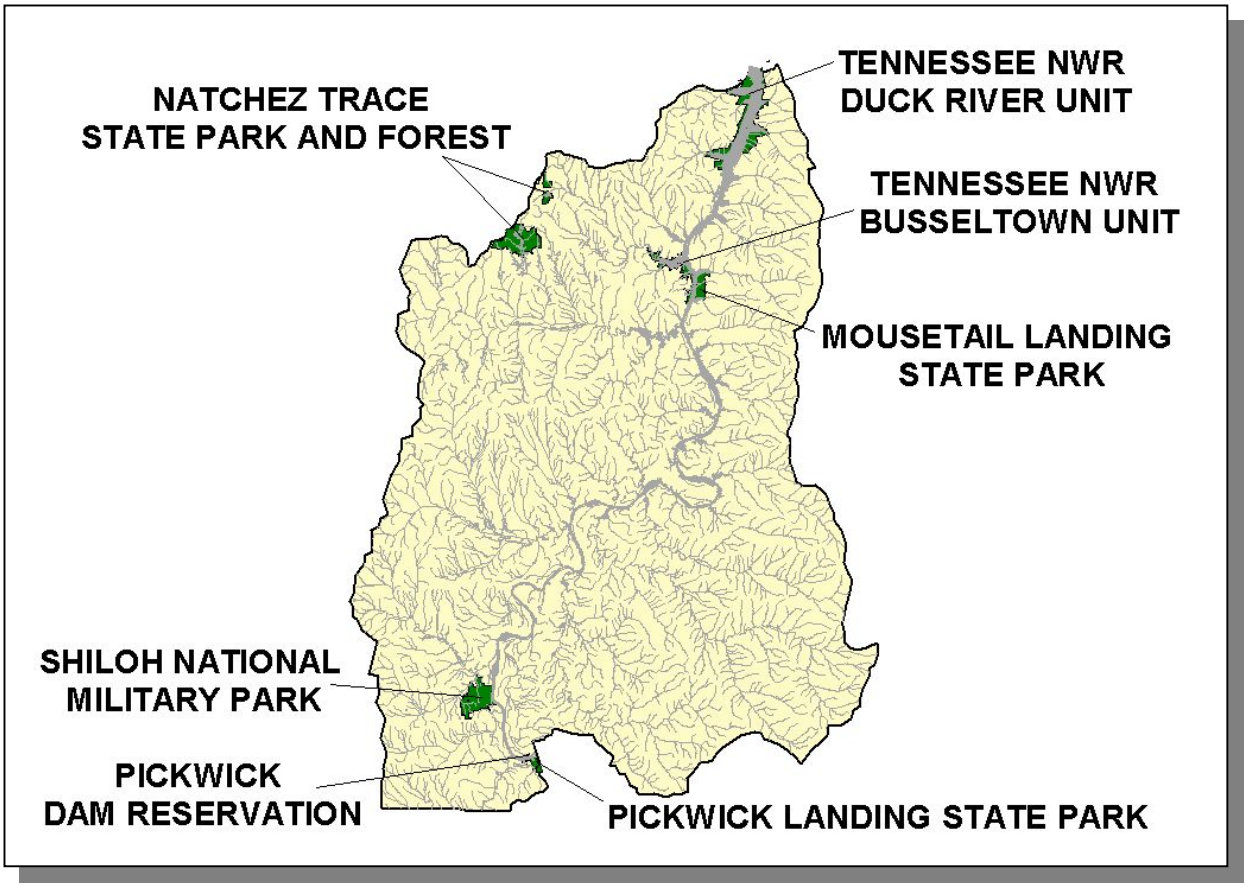

Figure 2-12. Locations of State- and Federally-Managed Lands in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

2.7.C. Wildlife Management Area. The Tennessee Wildlife Resources Agency manages eight wildlife management areas in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

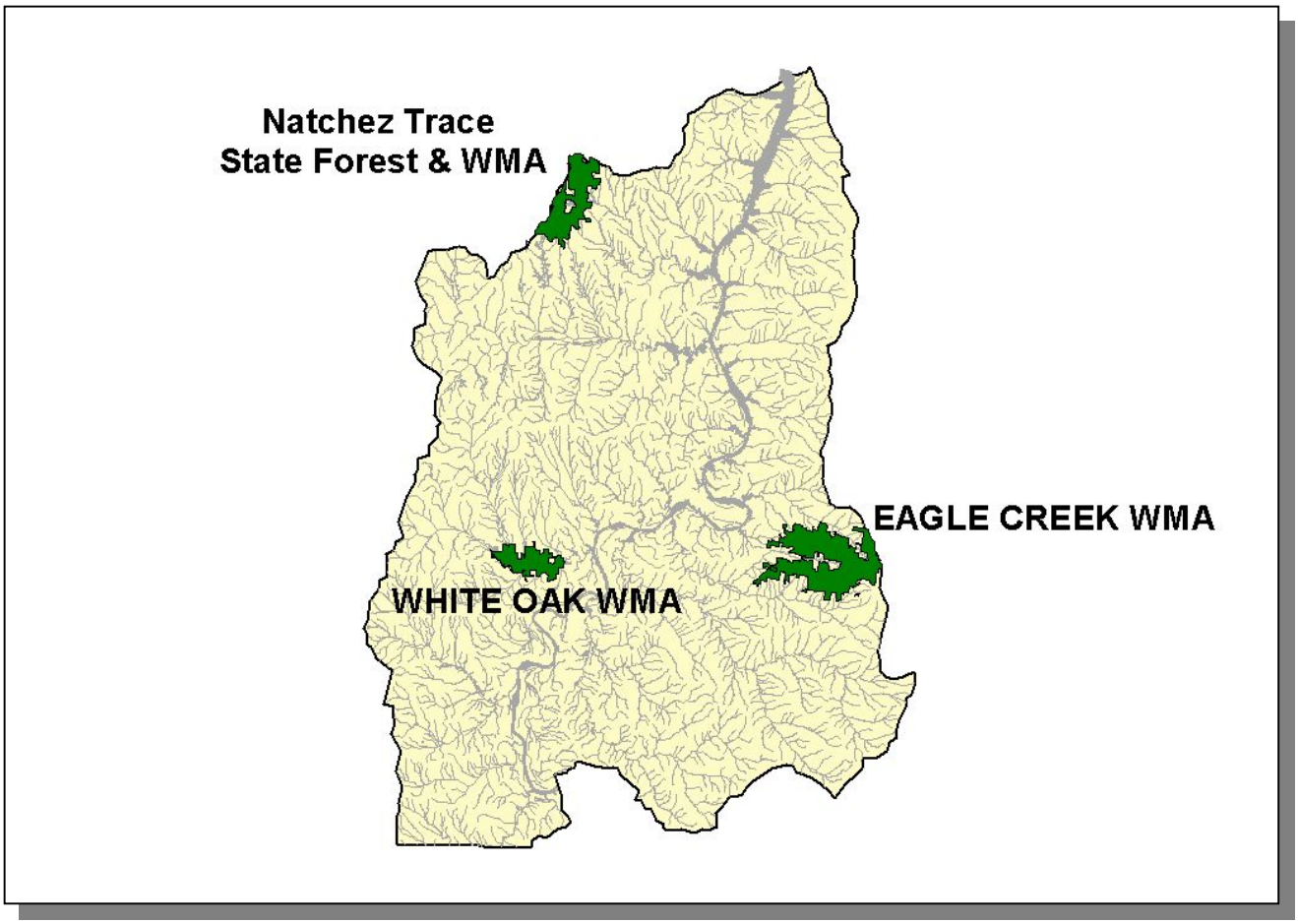

Figure 2-13. TWRA Manages Wildlife Management Areas in the Tennessee Portion of the Tennessee Western Valley (Beech River) Watershed.

2.8. Tennessee Rivers Assessment Project. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

http://www.state.tn.us/environment/wpc/publications/riv/

STREAM	NSQ	RB	RF		STREAM	NSQ	RB	RF
Arms Creek	3				Lick Creek (West)	3		4
Bear Creek	3				Little Owl Creek	3		
Beason Creek	3				Little Snake Creek	4		
Beech Creek	3				Little White Oak Creek	3		
Beech River	3,4	3	2		Marsh Creek	2		2
Big Creek	3				Middleton Creek	4		
Big Hurricane Creek	4				Miles Creek	4		
Blue Creek	2				Morrison Creek	2		
Boon Creek	2				Mud Creek	2		
Browns Creek	4				North Fork Beason Creek	3		
Cane Creek	4		2,3		North Fork Mud Creek	3		
Cedar Creek	2				Owl Creek	4		
Chalk Creek	3				Piney Creek	4		
Chambers Creek	3,4				Rayburn Creek	2		
Clarey Branch Snake Creek	4				Right Fork Whites Creek	3		
Clear Creek	2	3			Roan Creek	2		2
Crooked Creek	2		3		Rogers Creek	3		
Cub Creek	2		1,2		Rushing Creek	3		2
Cypress Creek			2		Shakerag Branch Hardin Creek	2		
Doe Creek	1,2	2			Short Creek	1		
Dollar Creek	3				Smith Fork Indian Creek	1		
Dry Creek	3				Snake Creek	4		
Eagle Creek	3	3			South Fork Mud Creek	3		
East Prong Doe Creek	2				Spring Creek	2		
English Creek	2				Stewman Creek	2		
Flat Creek	4		2		Sulfur Fork Cub Creek	3		
Flat Gap Creek	2				Toms Creek	2		
Flats Creek	4				Turkey Creek (Beech Creek)	3		2
Graham Branch Snake Creek	3				Turkey Creek (Horse Creek)	1		
Halley Creek	4				Turnbo Creek	3		3
Hardin Creek	2	3			Unnamed Creek	4		
Harmon Creek	4				Waldrop Creek	3		
Hatley Creek	4				Wardlow Creek	2		
Holland Creek	1				Waterfall Creek	1		
Horse Creek	3	3	2		Weatherford Creek	3		
Hurricane Creek	4				West Fork Cane Creek	4		
Indian Creek	2	2,3	1,2,3,4		West Prong Doe Creek	2		
Left Fork Whites Creek	3				White Oak Creek (East)	2		4
Lick Creek (East)	2		3,4		White Oak Creek (West)	3	2,3	
Lick Creek (Snake Creek)	3				Whites Creek	3		2
					Wolf Creek	4		

Table 2-5. Stream Scoring from the Tennessee Rivers Assessment Project in the Tennessee Western Valley (Beech River) Watershed.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed